

普通高等教育规划教材·专业英语系列



软件工程专业英语

丛书主编 翁家彥

本书主编 周 霜

副主编 党培培 何睦 闻秀



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**Specialized English for
Software Engineering**
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序 言

“专业英语系列”教材是辽宁省普通高等教育规划教材，“十二五”规划教材，即将由辽宁科学技术出版社正式出版。

当前，我国高等教育正面临重大改革，教育部提出的“以就业为导向”的指导思想，为我们研究人才培养的新模式提供了明确的目标和方向。深化教学改革和人才培养模式改革，根据社会的实际需求，培养具有特色鲜明的人才，是我们面临的重大课题。在认真领会教育部指导思想后，我们提出了完全符合就业和学生成才需要的培养目标，即“外语强，技能硬，综合素质高”。新的变化必然带来办学理念、教学内容、课程体系、教学方法等一系列的改革。为此，我们组织具有多年教学经验的英语教师，经过反复探讨、论证和修改，编写出这套“专业英语系列”教材。

本套教材遵循“理念创新，内容创新，方法创新”的原则，进行了大胆的改革实践，主要面向信息技术、数字媒体技术等相关专业，涵盖了基础英语、软件工程专业英语、多媒体技术专业英语等多个专业方向，层次分明，实践性强，重点突出能力培养，使学生能直接获得就业岗位需要的专业外语技能训练。

本套教材参考多所院校的外语教材，并结合大连软件学院学生的实际情况，有选择地改编和扩充了原教材的内容，使教材更符合学生的特点，具有更好的实用性和拓展性。

本套教材可供高等院校相关专业英语教学使用，也是广大专业技术人员自学的参考书之一。

我恳切希望，大家在使用本套教材的过程中，及时提出批评和意见，以利于我们进一步修改。我相信，经过大家的共同努力，这套教材一定能成为特色鲜明、紧贴就业岗位、大家喜爱的优秀教材。

翁家彧

2012年春于大连

前言

目前,我国与外国技术交流频繁,欧美、印度等国家对服务外包有很大需求,特别是二次发包的需求较大,所以,对于着眼于全球服务外包基地的大连来说,具备英语语言能力的软件很是适合。如何在软件行业培养具有一定操作技能,同时又拥有相应的英语实际应用水平的复合型人才是当务之急,软件技术和外语相结合的培养方式应运而生,从而服务于大连区域经济,服务于大连地区乃至其他区域的软件与服务外包领域。

通过对社会上用人单位对软件人才招聘要求的分析,特别是英语能力的相关要求,我们制定了本教材符合市场需求的的教学目标,即:使学生能用英语表达软件行业术语;掌握软件行业技术文档的书写格式;提高学生阅读及理解软件专业英文资料的能力;掌握计算机专业文章翻译的方法和技巧;初步具备用英语进行日常口头交流并了解用户需求的能力。软件工程专业英语虽然专业性很强,但是笔者并未忽视其中的商务基因,归根结底,知识和技能是为社会的经济、科技等发展服务的。

《软件工程专业英语》课程是要求学生在已经掌握计算机行业英语的基础上进一步掌握软件方向专业术语,熟悉软件文档的写作规范,提高软件文档的翻译技能。该课程学习目标面向市场,定位明确,旨在培养学生具备基本的阅读行业英语技术文献、编写英文软件开发文档、进行英文口语交流的能力,努力做到使学生毕业后能够参与英语语言环境下的软件公司基础项目或者进行相应的辅助性工作。

此外,为适应高职院校学生专升本考试的需要,在本书的内容编排上重视语法、阅读、写作等典型知识点的渗透和练习。

总之,培养出市场急需的具备英语口语能力,能进行软件行业英文文档阅读和书写的行业人才,不仅具有适应社会需求的现实意义,也是高职院校在人才竞争中取胜的法宝之一。

作者

目 录

Unit One Software Engineering 软件工程..... 1

 Part 1 Brief Introduction to Software Engineering 1

 Part 2 Procedure and Model of Software Development 9

Unit Two Software Requirement 软件需求 23

 Part 1 Brief Introduction to Software Requirement 23

 Part 2 Requirements Analysis Instructions 30

 Part 3 Case Study 34

Unit Three Software Design 软件设计 49

 Part 1 Outline Design 49

 Part 2 Details Design 55

 Part 3 Case Training 61

Unit Four Software Development 软件开发 75

 Part 1 Development of Embedded Software 75

 Part 2 Development of Application Software 84

Unit Five Software Testing 软件测试 102

 Part 1 Testing Methods 102

 Part 2 Recording Bugs 109

 Part 3 Case Study 115

Unit Six Software Maintenance 软件维护 130

 Part 1 Brief Introduction to Software Maintenance 130

 Part 2 Related Reports I 139

 Part 3 Related Reports II 140

 Part 4 Case Study 147

Unit Seven Software Project Management 软件项目管理 162

 Part 1 Brief Introduction to Software Project Management 162

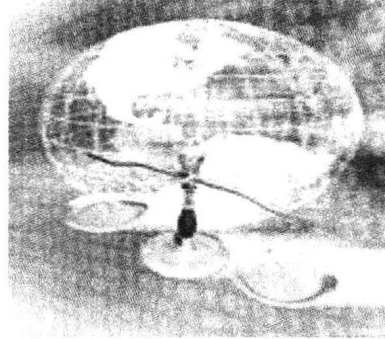
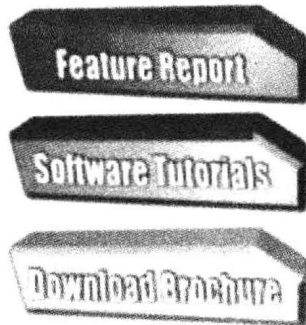
 Part 2 CMM 168

Unit Eight Software Outsourcing 软件服务外包 186

 Part 1 Software Outsourcing in Dalian 186

 Part 2 CISIS (China International Software and Information Service Fair) 193

Unit One Software Engineering 软件工程



Part 1 Brief Introduction to Software Engineering



Task 1 Background Learning

Read the following job ads and work in pairs discussing the questions given and then share your opinion with the whole class.

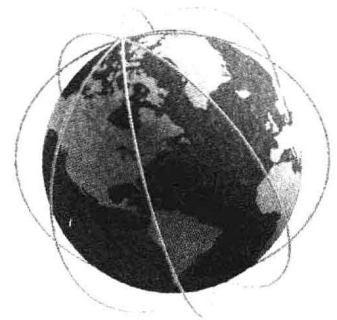
Jobs in this specialty area are responsible for designing, writing, and testing the instructions computers use to do useful tasks.

Description

- Write, test, and maintain programs computers use to perform tasks like playing games, sending e-mail, and creating greeting cards; etc...
- Update, repair, and change existing software programs.
- Listen to and use customer feedback and opinions to create new software programs.
- Use programming languages like C++, Java, and Visual Basic to write instructions for computers to use.
- Test and debug files.

Department of Labor Job Titles and Mean Annual Salaries for Illinois.

- Computer and Information Systems Managers - \$86,010



- Computer Programmers - \$61,080
- Computer Software Engineers, Applications - \$67,460
- Computer Software Engineers, Systems Software - \$82,920
- Computer Support Specialists - \$43,160
- Computer Systems Analysts - \$67,910
- Network and Computer Systems Administrators - \$59,180
- Network Systems and Data Communications Analysts - \$61,660
- Operations Research Analysts - \$64,390

Skills

- Logical thinking
- Detail-oriented
- Imagination
- Creativity
- Understanding of how to use technology to solve people's challenges
- Ability to visualize and understand abstract concepts

Education

.....

Career Ins & Outs

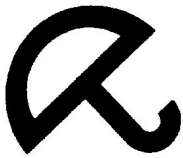
About the Job: Programming and Software Administrators are responsible for designing computer systems and software. They write the programs and software that make computers useful.

Job Advantages: Many Programming and Software Administrators have flexible scheduling. There are a number of job opportunities to explore in this area.

Job Disadvantages: Designing and developing systems and software is costly. Programming and Software Administrators must be able to work well under pressure and meet deadlines.

Transferable Skills: The traditional path for entering IT is to obtain a computer science degree and then get a job as a programmer. Programming and Software Administrators often benefit from project management experience. Experience in Network Administration and Analysis or System Testing provides a good foundation for programming for people who enter IT from another path.

- What is software?
- What are the characteristics of good software?
- What is software engineering?
- What are the fundamental software engineering activities?
- What is the difference between software engineering and computer science?



Task 2 Key Terms and Key Sentences

A. Key Terms

1. software 软件
2. software engineering 软件工程
3. software engineering environment 软件工程环境
4. software tools 软件工具
5. documents 文档
6. tool box 工具箱
7. integrated tool 集成工具
8. program 程序
9. application software 应用软件
10. backup 备份
11. structure 结构
12. object-oriented 面向对象的

B. Key Sentences

1. Software is not just a program or programs but also includes documentation. Essential software product characteristics are maintainability, dependability, security, efficiency, and acceptability.

2. Good software should deliver the required functionality and performance to the user and should be maintainable, dependable, and usable.

3. Software engineering is an engineering discipline that is concerned with all aspects of software production.

4. The software process includes all of the activities involved in software development, such as specification, development, validation, and evolution.

5. Software products may be developed for a particular customer or may be developed for a general market.

6. Software must be acceptable to the type of users for which it is designed. This means that it must be understandable, usable, and compatible with other systems that they use.

7. While all software projects have to be professionally managed and developed, different techniques are appropriate for different types of system.





Task 3 Passages Learning

Passage 1

What do Software and Software Engineering Mean?

The term software was first used in this sense by John W. Tukey in 1957; colloquially, the term is often used to mean application software. In computer science and software engineering, computer software is all information processed by computer system, programs and data. Software engineering is an engineering discipline that is concerned with all aspects of software production from the early stages of system specification through to maintaining the system after it has gone into use. In this definition, there are two key phrases:

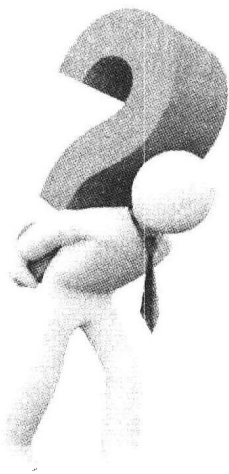
1. Engineering discipline

Engineers make things work. They apply theories, methods, and tools where these are appropriate. However, they use them selectively and always try to discover solutions to problems even when there are no applicable theories and methods. Engineers also recognize that they must work to organizational and financial constraints so they look for solutions within these constraints.

2. All aspects of software production

Software engineering is not just concerned with the technical processes of software development. It also includes activities such as software project management and the development of tools, methods, and theories to support software production. Engineering is about getting results of the required quality within the schedule and budget. This often involves making compromises—engineers cannot be perfectionists. People writing programs for themselves, however, can spend as much time as they wish on the program development.

In general, software engineers adopt a systematic and organized approach to their work, as this is often the most effective way to produce high-quality software. However, engineering is all about selecting the most appropriate method for a set of circumstances so a more creative, less formal approach to development may be effective in some circumstances. Less formal development is particularly appropriate for the development of web-based systems, which requires a blend of software and graphical design skills.



New Words and Expressions

1. application *n.* 应用; 运用; 申请, 请求; 申请表格
2. program *n.* 节目; 计划, 方案; 程序 *v.* 给……编写程序; 为……制订计划
3. ComponentEvent 组件事件

4. ContainerEvent 容器事件
5. WindowEvent 窗口事件
6. FocusEvent 焦点事件
7. KeyEvent 键盘事件
8. MouseEvent 鼠标事件
9. ActionEvent 动作事件
10. AdjustmentEvent 调节事件
11. ItemEvent 项目事件
12. TextEvent 文本事件

Passage 2

Origins and Impact of Software Engineering

The term software engineering was used occasionally in the late 1950s and early 1960s. Software engineering was popularized by the 1968 NATO Software Engineering Conference held in Garmisch, Germany and has been in widespread use since.

The term software engineering is used with at least three distinct meanings:

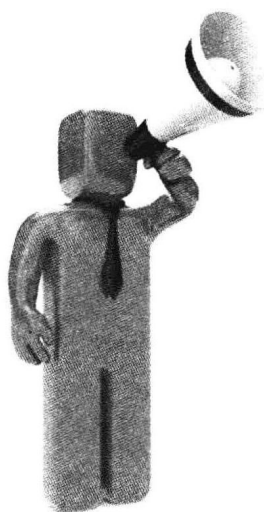
As the usual contemporary term for the broad range of activities that was formerly called programming or systems analysis;

As the broad term for the technical analysis of all aspects of the practice, as opposed to the theory of computer programming;

As the term embodying the advocacy of a specific approach to computer programming, one that urges that it be treated as an engineering profession rather than an art or a craft, and advocates the codification of recommended practices in the form of software engineering methodologies.

Software engineering affects economies and societies in many ways. Software engineering changes world culture, wherever people use computers. Email, the world-wide web, and instant messaging enable people to interact in new ways. Software lowers the cost and improves the quality of health-care, fire departments, and other important social services.

Successful projects where software engineering methods have been applied include Linux, the space shuttle software, and automatic teller machines. When it is cheaper to run a business or agency with software applications than without, businesses and agencies often invest in computers, software, and personnel.





Task 3 Dialogue Practicing

Dialogue 1

A: Hello, I am Tony. May I know your name?

B: My name is Wang Bing. Nice to meet you.

A: Nice to meet you, too. I'm a senior in Software Engineering Department. You are a freshman, aren't you?

B: Yes. I have been here for only one and a half months.

A: I think you would like to learn computer science technology, don't you?

B: Yes. I have been interested in it since I was a child.

A: Gee! Me, too. I dream to become Bill Gates or Steve Jobs.

B: By the way, do you know something about the courses and certification of professional software engineers? I need to organize my college life.

A: Of course. I have obtained several certifications and I think I can give you some advice about your study.

B: Sounds great! Oh, it's time for lunch. Would you like to have lunch with me?

A: My pleasure!



Dialogue 2

A: Hello, I am Tony. May I know your name?

B: My name is Wang Bing. Nice to meet you.

A: Nice to meet you, too. I'm a senior in Software Engineering Department. You are a freshman, aren't you?

B: Yes. I have been here for only one and a half months.

A: I think you would like to learn computer science technology, don't you?

B: Yes. I have been interested in it since I was a child.

A: Gee! Me, too. I dream to become Bill Gates or Steve Jobs.

B: By the way, do you know something about the courses and certification of professional software engineers? I need to organize my college life.

A: Of course. I have obtained several certifications and I think I can give you some advice about your study.

B: Sounds great! Oh, it's time for lunch. Would you like to have lunch with me?

A: My pleasure!



Exercises

Activity 1

Translate the following terms into Chinese.

Software engineering can be divided into ten sub-disciplines. They are:

1. Software requirements _____
2. Software design _____
3. Software development _____
4. Software testing _____
5. Software maintenance _____
6. Software configuration management _____
7. Software engineering management _____
8. Software development process _____
9. Software engineering tools _____
10. Software quality _____

Activity 2

Complete the following passage with the words given.

purpose	programs	refers to
function	use	serving

Computer software (or simply software) _____ one or more computer _____ and data held in the storage of a computer for some _____. Program software performs the _____ of the program it implements, either by directly providing instructions to the computer hardware or by as input to another piece of software. Data software exists solely for its eventual _____ by other program software.

Activity 3

Translate the sentences into English.

1. 使我们感到惊奇的是，她的英语说得如此的好。

2. 开会的时间到了，咱们把收音机关了吧。

3. 尽管有许多困难，我们仍然决心执行我们的计划。

4. 我们居住的地球是一个大球体。

5. 我们向林先生学习，因为他有丰富的工作经验。

Activity 4

Read the passage and answer the following questions.

Software engineering (SE) is the profession concerned with specifying, designing, developing, creating and maintaining software applications by applying technologies and practices from computer science, project management, and other fields.

SE applications are used in a wide range of activities, from industry to entertainment. Software applications improve user productivity and quality of life. Application software examples: office suites, video games, and the World Wide Web. System software examples: embedded systems and operating systems.

SE technologies and practices improve the productivity of developers and the quality of the applications they create. Software engineering examples: databases, languages, libraries, patterns, and tools. Computer science examples: algorithms and data structures. Project management examples: processes.

Questions:

1. What is software engineering as a profession concerned with?

2. What effect does software applications perform?

3. Give some specific examples concerning application software.

4. Give some specific concerning software engineering.

Activity 5***Translate the following sentences into Chinese***

1. Computer science focuses on theory and fundamentals; software engineering is concerned with the practicalities of developing and delivering useful software.

2. Software engineering is facing the key challenges of coping with increasing diversity, demands for reduced delivery times, and developing trustworthy software.

3. System engineering is concerned with all aspects of computer-based systems development including hardware, software, and process engineering. Software engineering is part of this more general process.

4. Roughly 60% of software costs are development costs; 40% are testing costs. For custom software, evolution costs often exceed development costs.

5. The Web has led to the availability of software services and the possibility of developing highly distributed service-based systems. Web-based systems development has led to important advances in programming languages and software reuse.

Part 2 Procedure and Model of Software Development**Task 1 Key Terms and Key Sentences****A. Key Terms**

1. Open Data Base Connectivity (ODBC) 开放数据库连接标准
2. Object-Oriented Programming (OOP) 面向对象程序设计
3. interface 接口/界面
4. TCP/IP 传输控制协议/Internet 协议
5. System Requirements Review (SRR) 系统需求评审
6. Local Area Network (LAN) 局域网
7. Graphical User Interface (GUI) 图形用户界面

8. Integrated Development Environment (IDE) 集成开发环境
9. HTTP 超文本传输协议
10. document description 文档说明
11. dynamic classification 动态分类
12. Firewall 防火墙
13. development process 开发过程
14. component diagram 构件图
15. context 环境
16. configuration management 配置管理
17. gateway 网关

B. Key Sentences

1. System software helps run the computer hardware and computer system.
2. System software includes operating systems, device drivers, programming tools, servers, windowing systems, utilities and more.
3. Application software allows a user to accomplish one or more specific tasks.
4. Fish can not live without water. Similarly, a computer can not go without software.
5. Details tools that can be used to visualize data-native graphics for the Web, such as ActionScript, Flash libraries, PHP, and JavaScript and tools to design graphics for print, such as R and Illustrator. Contains numerous examples and descriptions of patterns and outliers and explains how to show them.



Task 2 Passages Learning

Passage 1

This procedure for document control covers approval, archiving and change control, within a project, of product documents and software development plan.

The following types of documents are product documents:

- Software requirements specification
- Software test specification
- Software design document
- Source program files

Project documents must be maintained during the life-time of the project. At project conclusion, they shall be offered to the company's quality management for archiving. Product documents must be maintained during the whole life-time of the product.



The following types of documents are project documents:

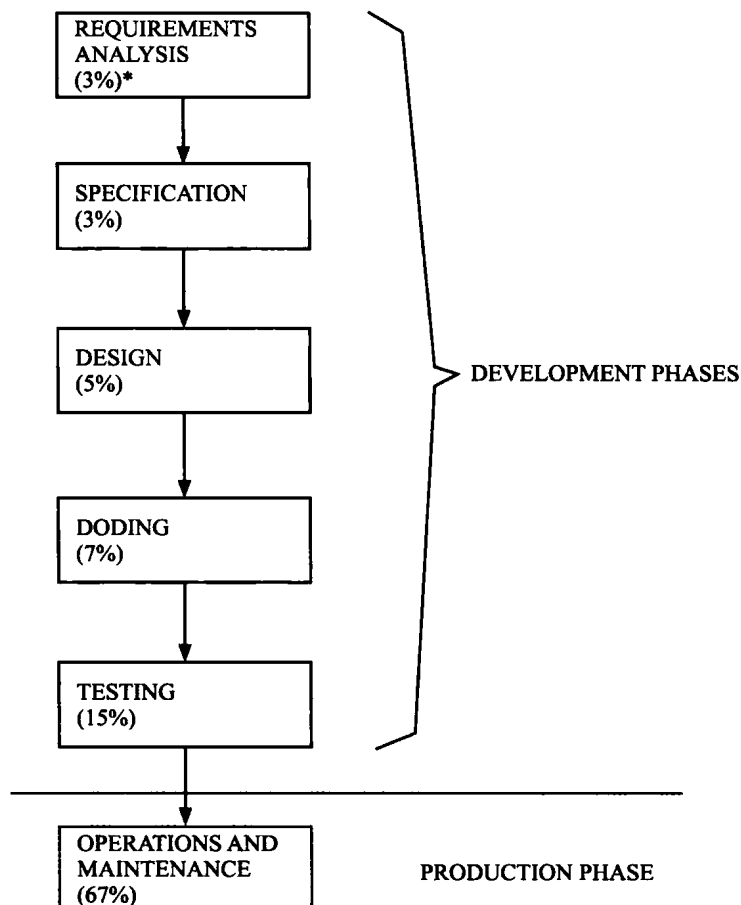
- Software development plan
- Review records
- Test records
- Milestone records

Passage 2

Software Development Model

Model-driven analysis emphasizes the drawing of pictorial system models to document and validate both existing and/or proposed systems. Ultimately, the system models become the blueprint for designing and constructing an improved system. Structured analysis is such a technique. The emphasis in this technique is process-centered. Systems analysts draw a series of process models called DFD. Object-Oriented analysis is another such technique that integrates data and process concerns into constructs called objects.

In a formal software development environment, the developing organization or team will have some mechanisms to document and track defects and deficiencies. Software just like most



*The percentages above indicate relative costs.